April, 2015 Date of Issue: April 15, 2015

Superconductivity Web21

Published by International Superconductivity Technology Center
KSP, Kawasaki, Kanagawa 213-0012 Japan Tel:+81-44-850-1612, Fax:+81-44-850-1613

Contents:

Top of Superconductivity Web21

Superconductivity Web21
Published by International Superconductivity Technology Center
KSP, Kawasaki, Kanagawa 213-0012 Japan
Tel:+81-44-850-1612, Fax:+81-44-850-1613
Top of Superconductivity Web21: http://www.istec.or.jp/web21/web21-E.html

This work was subsidized by JKA using promotion funds from
KEIRIN RACE
http://ringring-keirin.jp

April 2015 Date of Issue: April 15, 2015

Superconductivity Web21

Published by International Superconductivity Technology Center
KSP, Kawasaki, Kanagawa 213-0012 Japan Tel:+81-44-850-1612, Fax:+81-44-850-1613

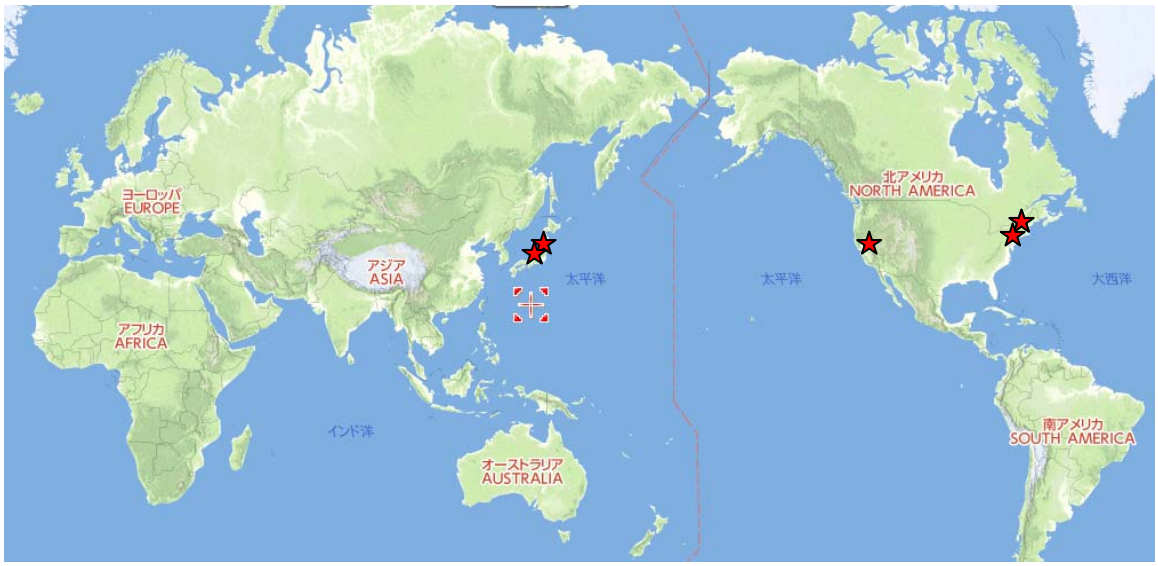
What's New in the World of Superconductivity

초전도 뉴스 –세계의 동향–

超导新闻 –世界的动向-

chāo dǎo xīnwén - shìjiè de dòngxiàng-

Yutaka Yamada, Principal Research Fellow
Superconductivity Research Laboratory, ISTEC



★News sources and related areas in this issue

▸Management and Finance 경영정보 经营信息[jīngyíng xìnxī]

Global Business Report on Superconductors

Global Superconductors - Strategic Business Report 2015 (27 Jan, 2015)

Research and Markets is now offering a report entitled "Superconductors - Global Strategic Business Report".

The report profiles 41 companies including many key and niche players, investigating the worldwide markets for Superconductors by Product Segments: Low Temperature Superconductors (LTS), and High Temperature Superconductors (HTS). End-User Segments are also analyzed: Magnetic Resonance

Published by International Superconductivity Technology Center
KSP, Kawasaki, Kanagawa 213-0012 Japan Tel:+81-44-850-1612, Fax:+81-44-850-1613

Imaging (MRI), Research & Development (R&D), Electronics, and Others. The report provides comprehensive analytics for the US, Canada, Japan, Europe, Asia-Pacific, and Rest of the World, with annual estimates and forecasts for the period 2013 through 2020.

Source:" Global Superconductors - Strategic Business Report 2015"
(27 Jan, 2015) News Release
http://www.globenewswire.com/news-release/2015/01/27/700231/0/en/Global-Superconductors-Strategic-Business-Report-2015.html?print=1
Contact: Laura Wood, Senior Manager, press@researchandmarkets.com

AMSC Financial Report

AMSC (5 Feb, 2015)

AMSC reported financial results for its third quarter of fiscal 2014 ended December 31, 2014.

3rd quarter revenues of 2014 were $21.3 million, compared with $20.6 million for the same period of 2013. The year-over-year increase in revenues was due to greater revenues from their Wind segment, which partially offset the lower Grid segment revenue results. Net loss for the third quarter of fiscal 2014 decreased to $6.4 million, from $8.4 million, for the same period of fiscal 2013. Cash and cash equivalents at December 31, 2014 totaled $37.6 million, compared with $38.2 million at September 30, 2014.

Daniel P. McGahn, President and CEO, AMSC, stated that, "During the 3rd quarter, we grew revenues by 70%. We've also put the arbitration with Ghodawat behind to remain focused on the products, markets, and customers that will drive our future growth." Baseline company revenues are driven by two established product lines: electrical control systems for wind turbines and D-VAR® reactive compensation systems. Additionally, the company is also focused on delivering two disruptive solutions: ship protection systems for the U.S. Navy and Resilient Electric Grid systems for electric utilities utilizing superconductor technology.

For the 4th quarter ending March 31, 2015, AMSC expects that revenues will be in the range of $23 million to $25 million. For the full fiscal year 2014, the Company expects revenues to be in the range of $68 million to $70 million.

Source:"AMSC Reports Third Quarter Fiscal 2014 Financial Results and Provides Business Outlook" (5 Feb, 2015) Press Release
http://ir.amsc.com/releases.cfm
Contact: Kerry Farrell, kerry.farrell@amsc.com

▸Electronics 엘렉트로닉스 电子应用 [diànzǐyè yìngyòng]

Switching Superconductivity by Light

Institute for Molecular Science (13 Feb, 2015)

Superconductivity Web21

Published by International Superconductivity Technology Center
KSP, Kawasaki, Kanagawa 213-0012 Japan Tel:+81-44-850-1612, Fax:+81-44-850-1613

In recent years, much effort has been dedicated to developing a superconducting FET as a key component in quantum computation. A research team led by Prof. Hiroshi M. Yamamoto of the Institute for Molecular Science, National Institutes of Natural Sciences, has developed a novel superconducting transistor that can be reversibly switched between ON and OFF by light-irradiation.

In 2013, the research team developed the world's first organic superconducting FET based on the organic superconductor κ-(BEDT-TTF)2Cu[N(CN)2]Br (κ-Br), offering essential advantages such as flexibility and designability. The team fabricated a novel photo-switchable transistor by replacing the gate electrode with a 'spiropyran'-thin-film. When exposed to UV light it showed a rapid decrease of electrical resistance, going into a superconducting state after 180 seconds. Superconductivity carriers accumulate during UV light-induced electrical polarization of the photoactive spiropyran-film.

The research outcomes demonstrated a novel concept in which "superconductivity can be switched by optical stimuli" - a milestone for future high-speed switching devices or highly sensitive optical sensors. Dr. Masayuki Suda, a member of the research team said, "Now it takes 180 seconds to switch the FET, but it can be operated much faster in principle. It will open a way to a new type of devices that can satisfy glowing demand for a high-speed information infrastructure."

Source:"Switching superconductivity by light" (13 Feb, 2015) Press Release
https://www.ims.ac.jp/en/news/2015/02/13_3096.html
Contact: Hiroshi M. Yamamoto, yhiroshi@ims.ac.jp

Atomic-Layered Josephson Junction

National Institute for Materials Science (3 Feb, 2015)

Research groups based at NIMS and the University of Tokyo have discovered that an atomic difference in height between atomic layers of a superconductor fabricated on a silicon substrate (atomic step) behaves as a Josephson junction that can control the flow of supercurrent. Based on these findings, the team concluded that the atomic steps behave as Josephson junctions. This discovery offers the potential of superconducting nano-devices having atomic-scale dimensions and would enable quick and mass fabrication of Josephson junctions in a self-organizing manner in contrast to the current methods of fabricating junctions sequentially using conventional superconducting elements.

The research team employed a scanning tunneling microscope and discovered a special superconducting state called a Josephson vortex, is formed at the atomic steps of atomic-layered superconductors. Josephson vortices play a vital role in high-temperature superconductors, a promising technology for electric power applications. The results are expected to contribute to the identification of superconducting characteristics of high-temperature superconductors. This study has been published in Physical Review Letters, a journal of the American Physical Society, as an Editors' Suggestion article.

This study was jointly conducted with a researcher based at the Japan Atomic Energy Agency and the grants-in-aid for scientific research program sponsored by the Ministry of Education, Culture, Sports, Science and Technology.

Source:"Discovery of Josephson Junctions Generated in Atomic-Layered Superconductors" (3 Feb, 2015) Press Release
http://www.nims.go.jp/eng/news/press/2015/01/201412110.html
Contact: Takashi Uchihashi, uchihashi.takashi@nims.go.jp

▸Basics 기초 基础[jīchǔ]

Aluminum "Superatoms" to Form Cooper Pairs around 100K

University of Southern California (25 Feb, 2015)

A group led by Vitaly Kresin, professor of physics based at USC has found that aluminum "superatoms" appear to form Cooper pairs at temperatures around 100K, behaving like a giant atom with a predictable shell structure. Superatoms that form Cooper pairs represent an entirely new frontier in the field of superconductivity.

Quantum mechanics predicts shells of electrons of increasing size and increasing numbers of electrons orbiting around a nucleus. The fact that superatoms also have a large set of electron shells made USC scientists hypothesize that they may also exhibit Cooper pairing. Kresin and his team fabricated aluminum superatoms with specific sizes (from 32 to 95 atoms large) and then fired a laser at various energies and temperatures, recording the number of electrons knocked-off. A simple plot of the data should have revealed a linear relationship - as the energy of the laser increases, more electrons are knocked off proportionally. For superatoms with 37, 44, 66 and 68 aluminum atoms, the data plot instead showed disparities, which indicated that at certain energy levels the electrons were opposing the laser's effort to knock them away from their shell, which the group proposed was due to Cooper pairing helping the electrons to cling to each other. The disparity appeared as the temperature was reduced, occurring somewhere around 100K, an indication in the formation of Cooper pairs.

Prof. Kresin was quoted as saying "This may be the discovery of a new family of superconductors, and raises the possibility that other types of superatoms will be capable of superconductivity at even higher temperatures." He also added, "One-hundred Kelvin might not be the upper-temperature barrier. It might just be the beginning." Their findings were published by Nano Letters on Jan. 28. The research was supported by the National Science Foundation.

Source:"Warming Up the World of Superconductors"
(25 Feb, 2015) Press Room
https://pressroom.usc.edu/warming-up-the-world-of-superconductors/
Contact: Robert Perkins, perkinsr@usc.edu

Top of Superconductivity Web21

April 2015 Date of Issue: April 15, 2015
Superconductivity Web21
Published by International Superconductivity Technology Center
KSP, Kawasaki, Kanagawa 213-0012 Japan Tel:+81-44-850-1612, Fax:+81-44-850-1613

Feature Article: Reporting on ISS2014/ISS-IEA Joint Session "Physics and Chemistry/Vortex Physics"

Atsutaka Maeda, Professor
Department of Basic Sciences,
Graduate School of Arts and Sciences, The University of Tokyo

ISS facilitates programs under several topics that are selected from current research trends to be presented over a very limited 1.5 days.

We were delighted to welcome Professor B. Maple as the special plenary speaker at this symposium. He shared his thoughts on important issues arising on the exploration of room-temperature superconductors, which no longer seem to be a dream.

The general session highlighted the topics, which included, (1) new superconducting materials; (2) the development of new measurement/evaluation techniques; (3) enhancement of critical current densities induced by particle beam irradiation; (4) topological superconductors, (5) progress in vortex physics, and (6) others. Topic (1) presented new materials that featured 2D structures and antiferromagnetic spin fluctuations (Sefat), honeycomb layered structures (Yajima), zigzag chains (Katayama) and increases in c-axis lengths induced by intercalation (Hosono-Hatanaka-Koike), all leading to the realization of higher critical temperatures T_c. Moreover, of particular attention were a series of novel materials developed and based on (Ca,RE)FeA_2 structures (Ogino), 1111 family $CaFeAsH_x$ (Matsuishi) and specific compositions of $FeSe_{1-x}Te_x$ thin films fabricated on CaF_2 substrates (Maeda), which had previously been impossible to engineer as bulk samples, resulting in an approximate 1.5-times increase in T_c. Reports under (2) comprised of a nanoSQUID-on-tip designed for scanning magnetic microscopy studies (Zeldov), and a new method combining the longitudinal magnetic field/flux measurements with the theoretical analysis model, allowing a theoretical approach for a superconducting gap structure (Maeda). Topic (3) included elaborate designs to increase critical currents using a variety of material structures based on TDGL theoretical analysis (Kwok), and research on critical current enhancement in iron-based superconductors induced by irradiation (Tamegai). Further to (4), theoretical reconciliation between varying sets of experimental data pertaining to the zero-bias conductance peaks observed in $Cu_xBi_2Se_3$ (Sato) and spin-polarized Majorana bound states inside an odd-parity topological superconductivity (Nagai) were reported. Topic (5) included simulation data on vortex dynamics in a Corbino geometry (Kato) and mode-locking experiments in MoGe Corbino Disk (Kawamura). The research reports of particular interest under topic (6) were STM experiments on high quality FeSe (Hanaguri), and electric double layer transistors based on oxide superconductor (Ueno). Finally, the author acknowledges that Dr. Kwok, based at Argonne National Laboratory, made a wonderful summary talk at the closing session.

Top of Superconductivity Web21

April 2015 Date of Issue: April 15, 2015
Superconductivity Web21
Published by International Superconductivity Technology Center
KSP, Kawasaki, Kanagawa 213-0012 Japan Tel:+81-44-850-1612, Fax:+81-44-850-1613

Feature Article: Reporting on ISS2014/ISS-IEA Joint Session "Wires, Tapes and Characterization"

Masateru Yoshizumi, Associate Director/Director of the Sagamihara Laboratory
HTS Conductor Processing & Power Applications Division,
Superconductivity Research Laboratory/ISTEC

The wires/tapes related sessions shared active discussions between 30 oral presentations with around 40 posters. Several topics amongst these are introduced herewith.

At the Plenary Lecture held on the first day of ISS2014, Professor Kiss from Kyushu University reported on the development of technology used to evaluate wire characteristics. Kyushu University has progressed the development of methodologies to determine the distribution of wire characteristics by utilizing the Scanning Hall Probe Microscopy (SHPM) technique. It was reported that the in-field characteristics over the entire length of a wire was successfully evaluated by introducing a recently modified system with in-field evaluation capability of up to 5 T. The filament I_c characteristics during the scribing process were forecasted by the partial in-plane distribution data of the wire characteristics, with statistical deviations and wire I_c predictions proving the effectiveness of SHPM as an evaluation method.

Oral/Poster presentations held at the individual sessions that drew specific attention were studies pertaining to progress in wire manufacturing technology.

Professor Li from Shanghai Jiao Tong University reported on wire development undertaken under a project in China. The combination of IBAD-PLD made possible the manufacturing of 200~300 A/cm – 1000 m-long wires. The introduction of pinning centers was not considered since the priorities were to achieve greater process stability and higher I_c characteristics. It was impressive to see the on-going rapid progress of wire manufacturing development in China.

SuperPower-Furukawa reported their successful production of long wires incorporating BZO nanorods, which until now were limited to short wire production. The results of manufacturing wires greater than 500 m long (characteristic not yet evaluated) were presented. A stable manufacturing process producing BZO15 %-130 m long wires realized 1100A@30K, 3 T, highlighting the great performance characteristics attained in long wires. It was stated that this wire is already commercially available for high-field applications.

Fujikura demonstrated high-homogeneity of ±10 % I_c dispersion and a homogeneity variation of 1～5 % attained by 127-unit 300-500 m long wires, declaring their product as extremely high quality. The cost of laser systems has decreased over recent years because of increasing use in Si production. Thus, the company has focused developmental efforts aimed towards potential wire applications, which included establishing sufficient price competitive PLD-coated conductors. Other developmental efforts involved wire reliability evaluation by conducting strength studies, accelerated testing utilizing pressure vessels, and to accrue track records of magnetic operation.

SuperOx is a recent new entrant to wire production. Last year, the company shipped 20 km-long wires,

Published by International Superconductivity Technology Center
KSP, Kawasaki, Kanagawa 213-0012 Japan Tel:+81-44-850-1612, Fax:+81-44-850-1613

signifying the manufacturing outcomes of 120 A/4mm-wide, 1010 m-long wire (including substrate joint). This clearly displayed a rapid progress of their wire production capability and was realized by SuperOx Japan. Reported future plans included expanding their market share by advancing large-scale commercialization and customization in Russia whilst promoting sales activities of SuperOX Japan-manufactured wires.

Other presentations included plans of long wire production by STI in USA and a research group in EU, giving the impression that more companies worldwide are commencing long wire manufacturing for the potential commercialization of long Y-based coated conductors.

Further to Bi-based wire development, Dr. Kagiyama from Sumitomo Electric, reported their efforts and research outcomes. It was highlighted that advanced lamination technology improved wire strengths to 485 MPa, overcoming certain limitations to applications.

Top of Superconductivity Web21

April 2015 Date of Issue: April 15, 2015
Superconductivity Web21
Published by International Superconductivity Technology Center
KSP, Kawasaki, Kanagawa 213-0012 Japan Tel:+81-44-850-1612, Fax:+81-44-850-1613

Feature Article: Reporting on ISS2014/ISS-IEA Joint Session "Films & Junctions/Electronics Devices"

Mutsuo Hidaka, Chief Senior Researcher
Superconducting Measuring Device Group, Nanoelectronics R&D Division
National Institute of Advanced Industrial Science and Technology

The "Films & Junctions/Electronics Devices" session comprised a total of 49 presentations of which 18 were oral and 31 were poster presentations. Table 1 shows a breakdown of each category. The author herewith introduces the most outstanding presentations from the categories of Thin film/Junctions, SQUID and Digital.

Table1 Numbers of presentations made for each category

Category	Oral	Poster	Total
Thin film	4	11	15
Junction	2	0	2
SQUID	5	9	14
Digital	4	5	9
Microwave	0	3	3
Detector	2	0	2
Standard	1	3	4

Regarding the Thin film category, Dr. Ichinose based at the Central Research Institute of Electric Power Industry, reported on their observational findings between Fe thin films and underlying substrates utilizing Transmission Electron Microscopy (TEM). Their results suggested possible interdiffusion at the interface of thin films prepared on some types of substrates, and concluding that greater interdiffusion strongly influences superconductivity in Fe films. The group established that CaF_2 substrates offered the best characteristics. Moreover, interfacial analysis of three types of thin films prepared on CaF_2 substrate indicated superior characteristics offered by SmFeAs, which was explained by the change in the strain effect. Hatano from Nagoya University fabricated a single crystal of Ca122 by MBE, allowing the phase diagram for the material system to be mapped. Regarding Junctions, Pekola from Aalto University reported his findings on an NIS tunnel junction. Photon assisted tunneling processes had a significant influence on the reported tunneling characteristics, with photon shields demonstrating the prospect of remarkably reducing sub-gap currents. This heightens expectations of NIS junctions in potentially interesting applications such as cryogenic thermometer operating at less than 1K and electron cooling.

Zhang based at SIMIT introduced the concept of practical SQUIDs. The aim is the development of practically viable SQUID systems demonstrating ease of use, greater stable and reliability, which includes not only SQUIDs but also room temperature electronics. As an example, he demonstrated a combination of a SQUID with weak-damping β_c>1, a parallel-connected bipolar amplifier (PCBA), and a current feedback circuit (CFC). Hato based at ISTEC, reported the on-going development of SQUID-based underground resource exploration and oil monitoring systems. Underground resource exploration systems employing SQUIDs enable exploration 1200 m below the surface, far exceeding the current limitation of 750 m managed by conventional induction coil systems. SQUID-based oil monitoring systems observe

Published by International Superconductivity Technology Center
KSP, Kawasaki, Kanagawa 213-0012 Japan Tel:+81-44-850-1612, Fax:+81-44-850-1613

underground CO_2 expansion. It was highlighted that an integrated technology could offer the developmental key, which would allow SQUIDs to operate in a 4-inch diameter pipe under pressures of 70 MPa and temperatures of 250 °C, located 3000 m deep underground.

The Digital field has seen research trends focusing on superconducting integrated circuits and magnetic thin film hybrid materials. Kurokawa from Nagoya University successfully reduced 0.3 mA of offset current by implementing phase shifting elements consisting of magnetic films in a Quantum Flux Parametron (QFP) superconducting loop. Sano based at Yokohama National University presented a time-to-digital converter (TDC) utilizing a single flux quantum (SFQ) circuit integrated in a superconducting nanowire single-photon detector (SNSPD) readout circuit to be utilized for a mass spectrometry. SFQ-TDC and SNSPD, which have until now been housed in individual chambers have been successfully operated in the same chamber. The utilization of SFQ circuits as superconducting detector readout circuits is another emerging trend in digital research.

Top of Superconductivity Web21

April 2015 Date of Issue: April 15, 2015

Superconductivity Web21

Published by International Superconductivity Technology Center
KSP, Kawasaki, Kanagawa 213-0012 Japan Tel:+81-44-850-1612, Fax:+81-44-850-1613

Feature Article: Reporting on ISS2014/ISS-IEA Joint Session "IEA-HTS-IA*Young Generation Award"

Yutaka Yamada, Principal Research Fellow
Superconductivity Research Laboratory/ISTEC

The first Young Generation Award was jointly held by the IEA-HTS-IA* (International Energy Agency-High Temperature Superconductivity -International Agreement) and ISS.

Photo 1 Presentation day with address from the Chairman of Executive Committee of IEA-HTS-IA. It proved to be a great success with many attendees despite the session starting 30 min earlier than other sessions.

The accolade recognized young researchers, below 35 years of age, by providing them an opportunity to make presentations in English and thereby grow beyond the boundary of their research fields. Even though this was the fist time the event was being held, the awards proved to be very popular since twice the number of applications were received and the program schedule had to be extended an additional 30 minutes. As shown by the table below, the seven nominated researchers coming from universities and research institutions, presented under a single theme entitled "My Research Work and Prospect of Future Energy" at 9-11 am on 26th November 2014 (Wed), during the ISS2014.

Table Presenters and the title of their presentations (8 min presentation and 5 min discussion)

Session Theme: **Future Energy Society and My Research Work**

Presenters

		Name	Affiliation	Title
1	Japan	**Kazuki Sugihara**	**Nagoya University**	Plan of the high efficient electric power system with the next generation superconducting cable
2	Japan	**Masashi Katsura**	**Sophia University**	The efficient use of renewable energy sources by ASP and the investigation in the properties of MgB 2 conductor
3	Japan	**Yuki Yoshida**	**Osaka University**	My research and Prospect of Future Energy: Study on decontamination and volume reduction of contaminated soil by radioactive substances using magnetic separation
4	Korea	**Soon-Mi Choi**	**Seoul National University**	My Perspective of the Superconductor Technology for Future Energy
5	Japan	**Saori Shibatani**	**Osaka University**	Removal of iron scale with superconducting magnet higradient magnetic separation from feed-water in thermal power plant
6	Japan	**Shigeyuki Ishida**	**AIST**	Search for new superconductors - Toward room-temperature superconductivity-
7	Japan	**Kohei Higashikawa**	**Kyushu University**	Advanced Diagnostics of Superconducting Wires and Tapes for High-performance and Highly-functional Power Applications Supporting Large-scale Introduction of Renewable Energy

April 2015 Date of Issue: April 15, 2015
Superconductivity Web21
Published by International Superconductivity Technology Center
KSP, Kawasaki, Kanagawa 213-0012 Japan Tel:+81-44-850-1612, Fax:+81-44-850-1613

The participants included one researcher (female) from Korea and six researchers (of whom one female) from nationwide Japan, comprising Nagoya University, Osaka University, Sophia University, Kyushu University and AIST. The invited panel judges were Dr. Martini (RSE)/Chairman of Executive Committee of IEA-HTS-IA, Dr. Flükiger/Vice-chair of Executive Committee of IEA-HTS-IA, Dr. Akita/Director of Central Research Institute of Electric Power Industry, Professor Shimoyama/The University of Tokyo, Dr. Kinoshita/NEDO, and Dr. Watanabe/Managing Director, ISTEC (IEA-HTS Office Agency). The presentation contents encompassed their wide variety of research studies ranging from enhancing wire characteristics, evaluation methods, magnetic separation applications and room-temperature superconductors. With regards to addressing *future energy society*, the nominees presented potential superconductor applications from the viewpoint of renewable energies, with considerations on important issues of how society can reduce the consumption of energy amidst significant population increases. The judges gave excellent reviews regarding the subject knowledge of the presentation materials and the presenters' use of English. The Q&A session was sometimes uneasy, but the researchers tried earnestly to respond to questions from the audience. The audience remained focused on the progress of the session.

Photo 2 Q&A discussions

Photo 3 Photo taken at the end of evening banquet of the presentation day: Presenters, Judges, and persons in charge

As part of the award ceremony held that evening to recognize their efforts, the researchers were invited to a social banquet with the judges. Further close relationship seemed to be cultivated via frank conversations. The author wishes that this opportunity would foster a closer relationship between the participating researchers and the judges.

Photo 4 First Prize Award
(Shibatani, Osaka University)

The award of excellence was held at the closing session on the final day of ISS. First prize went to Saori Shibatani from Osaka University, and the second prize was awarded to Kohei Higashikawa

Published by International Superconductivity Technology Center
KSP, Kawasaki, Kanagawa 213-0012 Japan Tel:+81-44-850-1612, Fax:+81-44-850-1613

of Kyushu University. Each received an award certificate together with prize money from Dr. Martini and Dr. Shima of NEDO/Committee Member of IEA-HTS, respectively.

Photo 5 Second Prize Award
(Higashikawa, Kyushu University)

Even though the preparation time for this first-time event was short, international presence of both participants and panel judges signified the success of the grand award ceremony due in part to the efforts of the ISS office administration. Good feedback was also received from participants after the session. Many positive comments included, "*Looking forward to the next session*", "*Hoping this session can also be held at EUCAS*", and "*Hope that in the future it could be expanded and not confined as a parallel session since I would like to attend more talks.*"

Whilst the number of international-scale conferences has increased, there are still limited opportunities for young researchers to make oral presentations in English. The author believes that this type of session will help contribute to the future potential of young researchers. He also wishes that such young researchers would prosper as global human resources, all aiming towards addressing common issues for the future energy society.

*IEA-HTS-IAOfficial name: International Energy Agency-High Temperature Superconductivity- International Agreement)
Committee aimed at fostering close communications between experts, utilizing the research outcomes attained by each country and promoting technological cooperation towards solving mutual issues etc towards the realization of superconductor technologies that are applicable to electricity sector. The committee members now include representatives from OECD countries namely, Japan, USA, Germany, Italy, Switzerland, Korea, Canada, Finland, and Israel, as well as sponsor corporates, including Bruker in Germany and Columbus in Italy.

Top of Superconductivity Web21

